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PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

INVENTOR(S)		
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☐ *Additional inventors are being named on the _____ separately numbered sheets attached hereto*

TITLE OF THE INVENTION (280 characters max)

Weather/Disaster Alert System Using a Communications Network

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ENCLOSED APPLICATION PARTS *(check all that apply)*

☒ Specification *Number of Pages* 12 ☐ CD(s), Number [ ]

☒ Drawing(s) *Number of Sheets* 2 ☐ Other (specify) [ ]

☐ Application Data Sheet. See 37 CFR 1.76

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT *(check one)*

☐ Applicant claims small entity status. See 37 CFR 1.27.

☐ A check or money order is enclosed to cover the filing fees

FILING FEE AMOUNT ($)

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☐ Payment by credit card. Form PTO-2038 is attached.

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No.

☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____.

Respectfully submitted

SIGNATURE _____ Date 11-12-02

TYPED or PRINTED NAME Jeffrey M. Navon REGISTRATION NO. *(if appropriate)* 32,711

TELEPHONE 609-734-6823 Docket Number: PU020452

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is used by the public to file (and by the PTO to process) a provisional application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the complete provisional application to the PTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C., 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Provisional Application, Assistant Commissioner for Patents, Washington, D.C. 20231.

WEATHER/DISASTER ALERT SYSTEM USING A COMMUNICATIONS NETWORK

Events such as storms, seismic activity or even terrorist attacks are unpredictable; however, these events can develop over time and/or last over a duration of time. During these periods, casualties, injuries and property damage can be avoided by alerting potential victims in advance. As such, warnings of these types of events before or during the event can save lives, spare injuries and protect property. Warning systems are most effective when the available information is timely conveyed to those individuals in harms way.

Most cable distributed broadcast networks are linked to local broadcast systems, but also include many national networks that are devoid of local information. Most local over-the-air broadcasts provide severe weather or disaster alert information. If these channels are not presently being viewed or listened to then this information is not provided to the end user or potential victims of the disaster or event.

Therefore, a need exists for a system and method, which permits event data to reach an end user or potential victim more effectively. A further need exists for a system and method, which also alerts individuals, which are not viewing or listening to a media channel/station.

The invention includes an alert receiver includes a discriminator, which receives encoded signals from a network. The encoded signals report an event from an information source coupled to the network, wherein the discriminator compares the encoded signals, which include codes designating geographic locations, to codes associated with specific localities to determine whether to alert a user. A warning device is responsive to a result of comparing the encoded signals to the codes associated with specific localities.

An alert system includes a receiver located at a user's location. The user's location has a code designation associated therewith. The receiver is coupled to a network from which a plurality of encoded reports are provided to

the receiver. A discriminator deciphers the encoded reports to determine those reports corresponding to the code designation associated with the user's location. A warning device is located at the user's location to inform a user of the reports corresponding to the code designation associated with the user's location.

Another alert system includes a receiver located at a user's location. The user's location has a code designation associated therewith. The receiver is coupled to a network, which carries television signals and receives television signals therefrom. The receiver is also configured to receive and render encoded reports separate from audio and visual data. The receiver includes a discriminator, which deciphers the encoded reports to determine those reports corresponding to the code designation associated with the user's location. A warning device is located at the user's location to inform a user of the reports corresponding to the code designation associated with the user's location.

The invention is described in reference to the following two figures, although the principles of the invention can be applied to a satellite network, a cable network, a telecommunication based network, and other types of communications networks.

The preferred embodiment of the invention operates in view of the SAME codes developed by the National Weather Service of the United States, although other types of weather related and geographic codes may be used.

FIG. 1 is a schematic diagram of a system for alerting individuals of an event in accordance with one embodiment of the present invention;

FIG. 2 is a block diagram of a receiver employed in accordance with the present invention to alert individuals of an event.

The preferred embodiment of the invention operates in view of the SAME codes developed by the National Weather Service of the United States, although other types of geographic codes (Table 1) and weather related codes (Table 2) may be used.

It should be understood that the drawings are for purposes of illustrating the concepts of the invention and are not necessarily the only

possible configuration for illustrating the invention.

The present invention provides a method and system for disseminating event information over a network. Event information may be designated for delivery to particular local areas. These areas may be determined at the information source, at an intermediary location, for example, a head end network for a cable system or at the destination, for example, in an individual's home. Once the local areas, which would be affected most, are determined, the system of the present invention signals a receiver device at the individual locations in the local areas. The signals can provide an audible or visual alert to inform users that a message or data about an event is being relayed. Then, the data or information is conveyed over the network in accordance with the present invention. The alert signals may be continued or a set duration or continue for the duration of the event.

It is to be understood that the present invention is described in terms of an illustrative cable network system; however, the present invention is much broader and may include any network system, which includes the capability of sending event messages and signaling across a network. For example, the present invention may be employed in a cellular network, a satellite network, etc. It should also be understood that the elements shown in the FIGS. may be implemented in various forms of hardware, software or combinations thereof. Preferably, these elements are implemented in a combination of hardware and software on one or more appropriately programmed general-purpose devices, which may include a processor, memory and input/output interfaces.

Referring now in specific detail to the drawings in which like reference numerals identify similar or identical elements throughout the several views, and initially to FIG. 1, a system 10 is shown in accordance with the present invention. Details of the individual block components making up the system architecture which are known to skilled artisans will only be described in details sufficient for an understanding of the present invention.

System 10 may include one or more information sources 12, which may include satellites, broadcast stations, weather stations, cellular sites or any other transmission source. In the illustrative embodiment, source(s) 12

provides data and information to a cable system 18. In a preferred embodiment, satellite network 12 provides global, national, or local programming 14 to cable network 18. In addition, cable network 18 may receive information from multiple sources. For example, cable network headend station 18 may receive information from local broadcast stations 16, such as local radio stations, from satellites 12, or from auxiliary sources 22, such as telephone or other cable or wireless networks.

During an event, such as a storm, catastrophe, act of war, etc., a news/reporting service, such as for example, the national weather service (NWS) or the EMWIN (Emergency Managers Weather Information Network) reports the event to the information source(s) 12. The information sources may include satellite (12), local broadcasts 16 or other sources 22.

Cable network headend 18 inserts pertinent information from the reporting sources for dissemination within a cable network 20. The pertinent information, such as news of an event or other information can be sent in a number of ways. The signals may be sent, for example, as closed captioning information on analog based channels, the information may be sent in a forward data channel in a network using security, or the information may be sent using some of the bandwidth of the digital channels. Data/information sent over cable network 20 from cable headend station 18 is sent to user homes 24. Users have a cable or other type of receiver 26, which receives the signals from the cable network, processes the signals and informs/warns the user of the event. The signals received from the headend 18 are preferably encoded with locality information. This includes information about local areas that are affected by the event.

In one embodiment, information is obtained and inserted at a cable system. The cable network headend 18 first receives one or more alert messages. These messages may come from several sources, including monitoring the over-the-air National Weather Service Broadcasts, or possibly through a connection to the EMWIN network directly, via the Internet or otherwise. The cable head end 18 then separates a key message, e.g., the SAME information from the other information. The SAME message is preferably an ASCII format message that may be around 50 or so bytes long.

This SAME message is then inserted as additional data into the data stream of a channel by appending and inserting an identifier PID (Program Identifier) into the digital transmission following the appropriate format rules for the signal. The PID may be established through a program guide function, as a predefined fixed number or by other techniques.

This PID is used in receiver 26 to determine what kind of information has been received. In this case, the PID identifies the information as an alert message, not a video or audio signal, and sends this information to the receiver's alert message identifier in receiver 26 and discriminator 32 (FIG.2) for processing. The small size of the alert message makes it easy to insert into all program channels relatively simultaneously. Furthermore, the signals can be sent over digital networks. Other embodiments for use with analog signals using the VBI insertion are also envisioned in a similar manner.

Receiver 26 may include a set top box, a television, a computer, a radio device, a cable or telephone modem or any other device equipped to relay warning information to a user. Since each home 24 may include a different receiver device or different setup, it is likely that, for a cable system, the data will need to be sent in a number of ways over a number of channels to ensure that all homes can and do receive the information.

Advantageously, since cable network 20 is usually regionally operated, the cable head end 18 can select which alert messages apply to their viewing areas. This may be done manually or automatically depending on the method of receiving the information at the headend station 18. For example, the messages received at the headend network may be encoded as to which areas would be affected by the event. Alternately, once received, the information may be encoded at the headend station 18 based on the locality to be alerted of the event. The total amount of data sent is quite small for a typical alert message; therefore, it is not anticipated that a significant loss of channel bandwidth will occur.

Receiver 26 provides information received from the cable headend network 18 to a user's audio or video rendering device 27, which may include a warning device 30. Warning device 30 may also be included as part of receiver 26 or externally connected to receiver 26. Receiver 26 preferably

discriminates or decodes the encoded information received from cable headend 18 to provide information to localities, which would benefit from the information.

One useful operation of receiver 26 arises when receiver 26 is employed for its originally intended mode of operation, e.g., as a television. In this case, receiver 26 receives a signal for display on a television, and this signal is not a re-broadcast of a local transmission over an air station. Most over-the-air stations automatically provide local weather and public safety alert information as an addition or as a preemption to the normal program material. However, stations that originate nationally, or stations created by a cable network (e.g., movie channels) will, in general, not include this information.

Once the information is introduced into the cable head end network 18 and sent into the cable system 20, receiver 26 discriminates this information and automatically preempts or inserts the warning information into the television display. That is, the television program may be preempted at particular localities in accordance with discriminated codes. This may also include data streaming or closed captioning across a portion of the screen of a television, for example. In addition, a picture in a picture (PIP) application may be initiated to convey the warning or alert. In this manner the cable system extends the features of the over-the-air broadcasts to potentially all stations that the cable system carries.

Referring to FIG. 2, a receiver 26 is illustratively shown for alerting users of an event. Receiver 26 may include a set top box, or other devices, such as a radio, a telephone, a television, a cable modem, a telephone modem or other device capable of audio and/or visual display for warning a user. Receiver 26 includes an information discriminator 32. Receiver 26 includes a setup screen or display 28 to enable, for example a "weather-alert" feature. Within this screen 28, the user may be asked what types of alerts to be notified of and for what region of the country. This information may also be provided from the source or cable head end 18. Receiver 26 preferably includes warning device 30 which may further include one or more of display

28, a visual warning device 31 (e.g., a flashing light) and/or an audio warning device 34 (e.g., a speaker).

In accordance with one embodiment of the present invention, receiver 26 employs the system described by the current NWS VHF FM radio broadcast network that now utilizes the SAME (Specific Area Message Encoding) system. The SAME system permits for specific messaging to selected areas of a coverage region. Options exist at both a transmit end and a receive end of the system to specify which messages will be received. For example, headend station 18 (FIG. 1) may discriminate which regions or regions will be read out on the display or be responsive to warning signals from specific regions. Alternately, receiver 26 may discriminate whether it is situated to receive a given message (e.g., the receiver 26 is located in a specified locale).

The SAME system in NWS uses what are called FIPS (Federal Information Processing System) codes, which include coded words 6 bytes long. These words segment the United States into regions, states, and counties. In other embodiments, other defining encoding may be employed, for example, zip codes or even addresses of individual users. The user can select which messages to receive by identifying the FIPS regions the user wants to be notified of. A user interface 38 may be employed to make the appropriate selections and/or program receiver 26. Given the regional operation of a cable system, a simpler or more complicated system may be employed. The cable receiver 26 may simply monitor the incoming messages from the head end network 18 and determine which messages to display based on user preferences, locale codes, date, time of day or any other criteria which can be programmed into the system. Predetermined criteria, e.g., FIPS codes, are programmed into receiver and compared to the encoded signals to determine if the information receive should be displayed and an alarm or alert mechanism activated.

In one embodiment, a user may be able to program a receiver memory 40 with one or more codes to receive information from headend network 18. For example, a user may program locale codes for their office and home, or their present location and the location of a friend or relative. In another

embodiment, stock and/or bond codes or market indexes may be entered into receiver 26 to alert a user of the status of financial events. Personal or other information may be programmed into receiver 26 to permit a reminder warning or other indicator to be made to the user if the event occurs (e.g., a date event) or a condition is met (e.g., the temperature of a remote location reaches a certain value).

A number of options exist for displaying the message or information on display 28. For example, a banner, generated by the receiver, similar to a closed caption message could be inserted to indicate an "alert" state and/or information about the event or condition, which caused the "alert" state. Additionally the receiver could emit a beeping tone, or some other indicator on the receiver itself as described above. Advantageously, the "alert" state is provided at any time regardless of whether the user is viewing a particular channel or listening to a particular station. Receiver 26 is preferably always on and ready to provide an alert at any time in accordance with the present invention. The system 10 is easily implemented and easy to use to provide a means of communications alert for those people not immediately addressable by other local alert methods.

In one embodiment, warning device 30 includes different responses to different reports. For example, audio warning device 34 may include a plurality of prerecorded messages or may include a tone or sound, which designates a level of importance or immediacy of the report. Visual warning device 31 may include a plurality of indicators, such as lights, which may include different colors or flash at different rates or intensities to designate a level of importance or immediacy of the report. In other embodiments, the warning device 30 may include a software, a hardware or a combination of both to re-tune a device to a different predesignated channel or station for a local off-air broadcast, which may relay information associated with the alert or the event. It is to be understood that warning device 30 may be included in receiver 26 or externally connected to receiver 26 by a wired or wireless connection.

Having described preferred embodiments for weather/disaster alert system using a cable network (which are intended to be illustrative and not

limiting), it is noted that modifications and variations can be made by persons skilled in the art in light of the above teachings. It is therefore to be understood that changes may be made in the particular embodiments of the invention disclosed which are within the scope and spirit of the invention.

ST.	NTY	SAME #	NWR TRANSMITTER	FREQ.	CALL	WATTS
NJ	Atlantic	034001	Atlantic City NJ	162.400	KHB38	1000
NJ	Bergen	034003	New York City NY	162.550	KWO35	500
NJ	Bergen	034003	Hardyston NJ	162.500	KZZ31	1000
NJ	Burlington	034005	Atlantic City NJ	162.400	KHB38	1000
NJ	Burlington	034005	Philadelphia PA	162.475	KIH28	1000
NJ	Burlington	034005	Southard NJ	162.450	WXM60	300
NJ	Camden	034007	Philadelphia PA	162.475	KIH28	1000
NJ	Cape May	034009	Lewes DE	162.550	WXJ94	500
NJ	Cape May	034009	Atlantic City NJ	162.400	KHB38	1000
NJ	Cumberland	034011	Atlantic City NJ	162.400	KHB38	1000
NJ	Cumberland	034011	Philadelphia PA	162.475	KIH28	1000
NJ	Cumberland	034011	Sudlersville MD	162.500	WXK97	1000
NJ	Essex	034013	New York City NY	162.550	KWO35	500
NJ	Essex	034013	Hardyston NJ	162.500	KZZ31	1000
NJ	Gloucester	034015	Philadelphia PA	162.475	KIH28	1000
NJ	Hudson	034017	New York City NY	162.550	KWO35	500
NJ	Hunterdon	034019	New York City NY	162.550	KWO35	500
NJ	Hunterdon	034019	Allentown PA	162.400	WXL39	1000
NJ	Hunterdon	034019	Hardyston NJ	162.500	KZZ31	1000
NJ	Hunterdon	034019	Philadelphia PA	162.475	KIH28	1000
NJ	Mercer	034021	Allentown PA	162.400	WXL39	1000
NJ	Mercer	034021	New York City NY	162.550	KWO35	500
NJ	Mercer	034021	Philadelphia PA	162.475	KIH28	1000
NJ	Mercer	034021	Southard NJ	162.450	WXM60	300
NJ	Middlesex	034023	New York City NY	162.550	KWO35	500
NJ	Middlesex	034023	Southard NJ	162.450	WXM60	300
NJ	Monmouth	034025	New York City NY	162.550	KWO35	500
NJ	Monmouth	034025	Philadelphia PA	162.475	KIH28	1000
NJ	Monmouth	034025	Southard NJ	162.450	WXM60	300
NJ	Morris	034027	Allentown PA	162.400	WXL39	1000
NJ	Morris	034027	New York City NY	162.550	KWO35	500
NJ	Morris	034027	Hardyston NJ	162.500	KZZ31	1000
NJ	Ocean	034029	Atlantic City NJ	162.400	KHB38	1000
NJ	Ocean	034029	New York City NY	162.550	KWO35	500
NJ	Ocean	034029	Southard NJ	162.450	WXM60	300
NJ	Passaic	034031	New York City NY	162.550	KWO35	500
NJ	Passaic	034031	Hardyston NJ	162.500	KZZ31	1000
NJ	Salem	034033	Philadelphia PA	162.475	KIH28	1000
NJ	Salem	034033	Sudlersville MD	162.500	WXK97	1000
NJ	Somerset	034035	Allentown PA	162.400	WXL39	1000
NJ	Somerset	034035	Hardyston NJ	162.500	KZZ31	1000
NJ	Somerset	034035	New York City NY	162.550	KWO35	500
NJ	Somerset	034035	Southard NJ	162.450	WXM60	300
NJ	Sussex	034037	New York City NY	162.550	KWO35	500
NJ	Sussex	034037	Allentown PA	162.400	WXL39	1000
NJ	Union	034039	Hardyston NJ	162.500	KZZ31	1000
NJ	Union	034039	New York City NY	162.550	KWO35	500
NJ	Union	034035	Southard NJ	162.450	WXM60	300
NJ	Warren	034041	New York City NY	162.550	KWO35	500
NJ	Warren	034041	Allentown PA	162.400	WXL39	1000
NJ	Warren	034041	Hardyston NJ	162.500	KZZ31	1000

Table I

NWR Alarms

Part A: Operational Procedures
Part B: Messages Alarmed *(including tests)*

A: OPERATIONAL PROCEDURES

When there is an alarm on NWR, the following 4-step procedure is followed:

1. A digital burst of information is broadcast. This digital burst, called Specific Area Message Encoding (SAME), contains information on the type of message, the area affected (usual by county), and the expiration time of the message. The Maximum message expiration time allowed is 6 hours after the alert.
2. The SAME burst is followed by a 10-second broadcast of the 1050 Hertz warning alarm tone.
3. The voice message is broadcast, describing the hazard, the area affected (usually by county), and the valid time period of the hazard. Other details, such as storm movement, storm spotter reports, damage reports, and specific locations of greatest danger may be included. NOTES about expiration time in SAME vs. valid time period in voice message:
    - For short-fuse hazards, such as a tornado warning, the valid time period is from the broadcast time of the alert until the SAME message expiration time.
    - For longer-fuse hazards, such as a winter storm warning, the beginning of the valid time period may not be the same as the alerting broadcast time and the end of the valid time period may not be the same as the SAME message expiration time. In such cases, updated messages are broadcast on or before the SAME message expiration time to provide fresh information. Updated messages will be alerted only for new warning information.
4. A SAME end-of-alert digital burst is broadcast. For any NWR transmitter, alerting messages will only be for areas within the reception range (or coverage area) of the transmitter, assuming no use of high gain external antennas. The coverage area typically extends out to a radius of about 40 miles from the transmitter, assuming level terrain. Coverage usually includes 5 to 10 average sized counties. Hills and Mountains will reduc the coverage area.
    - Many NOAA Weather Radio receiver models can be set to a muted "standby" or "alert" mode, and will turn on when the alerting message is received. Depending on the receiver brand and model, the receiver will either be activated by the SAM code or the 1050 Hertz warning alarm tone. Upon activation, some receiver models may have a flashing light or other visual attention signal. In any case, the 10-second 1050 Hertz warning alarm tone serves as an audible attention signal.
    - For receiver models activated by the 1050 Hertz tone, the receiver will activate whenever the tone is received.
    - For SAME-decoding receivers,the owner programs the county SAME codes for th county or counties he (she) wishes to be alerted for, thereby eliminating unwanted alerts for counties in the coverage area that are not of concern to the listener.

B: MESSAGES ALARMED CLICK HERE for procedures on weekly alarm tests.

Only the most imminent life- and property-threatening hazards are broadcasted with the SAME signal and 1050 Hertz warning alarm tone, where the public has to take immediate action to protect themselves and their property. An operational guideline is that messages are alerted only for hazards urgent enough to warrant waking people up in the "middle of the night" or otherwise interrupting someone's activities at any time. 1.

The following messages are always alerted on a NWR Transmitter if they apply to any part of its coverage area:

MESSAGE EVENT CODE

Table II

- Tornado Warning: TOR
- Severe Thunderstorm Warning: SVR
- Flash Flood Warning: FFW
- Tornado Watch: TOA
- Severe Thunderstorm: Watch SVA
- Hurricane Watch: HUA
- Hurricane Warning: HUW
- National Emergency: EAN 2.

The following messages are sometimes alerted if they apply to the coverage area of the transmitter, depending on the circumstances and the area of the country. Check with the Nationa Weather Service programming office of the NWR transmitter:

MESSAGE EVENT CODE

- Flash Flood Watch: FFA
- Winter Storm Warning: WSW
- High Wind Warning: HWW
- Tsunami Watch: TSA
- Tsunami Warning: TSW
- River Flood Watch: FLA
- River Flood Warning: FLW
- Special Marine Warnings: --none-- Local non-weather emergencies CEM

National Weather Service
Office of Climate, Weather, and Water Services
Last modified: August 6, 2002
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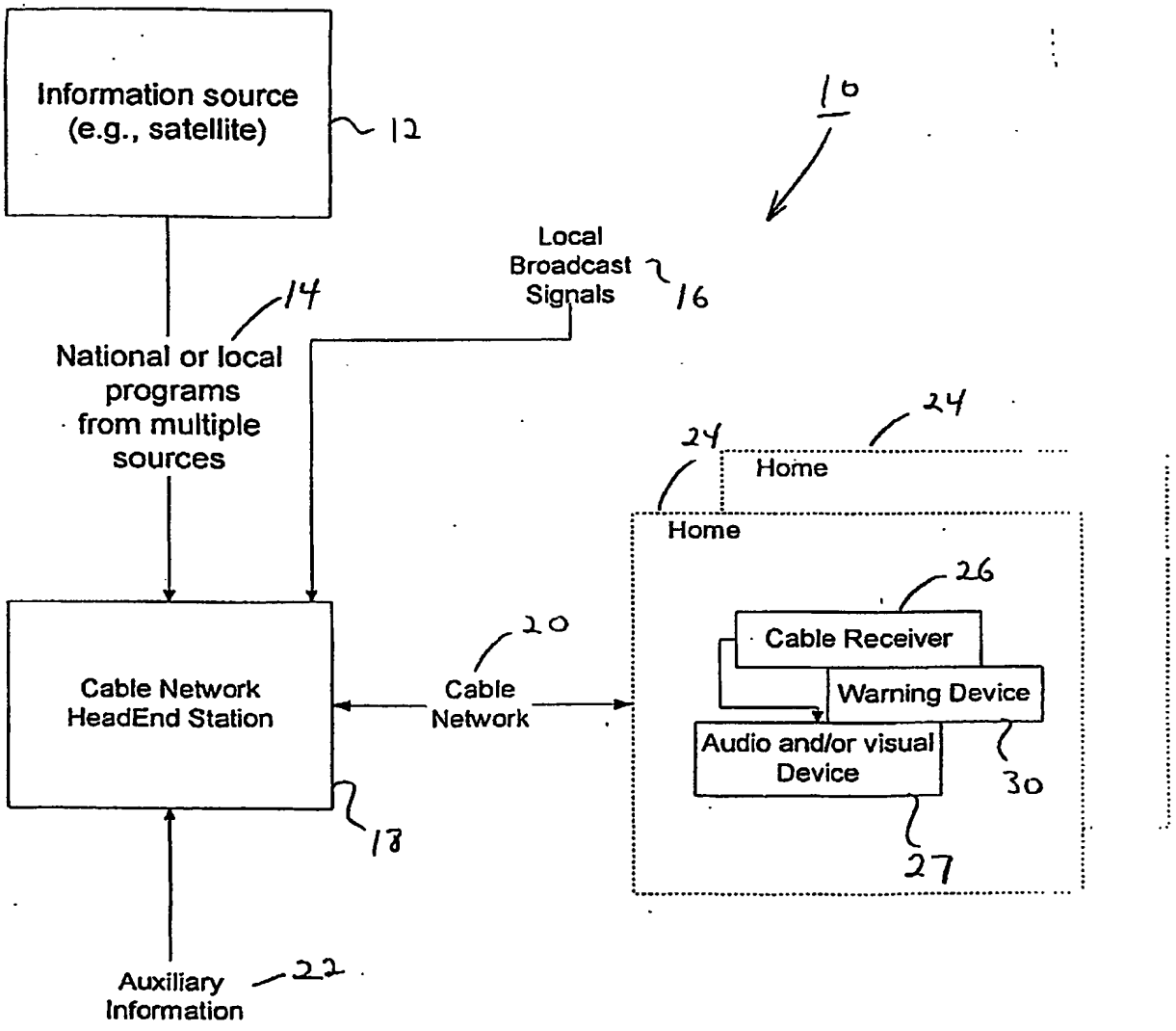
Information source
(e.g., satellite)
12
10
Local
Broadcast
Signals
16
14
National or local
programs
from multiple
sources
24
24
Home
Home
26
Cable Receiver
Warning Device
Audio and/or visual
Device
30
27
20
Cable
Network
Cable Network
HeadEnd Station
18
Auxiliary
Information
22

FIG. 1

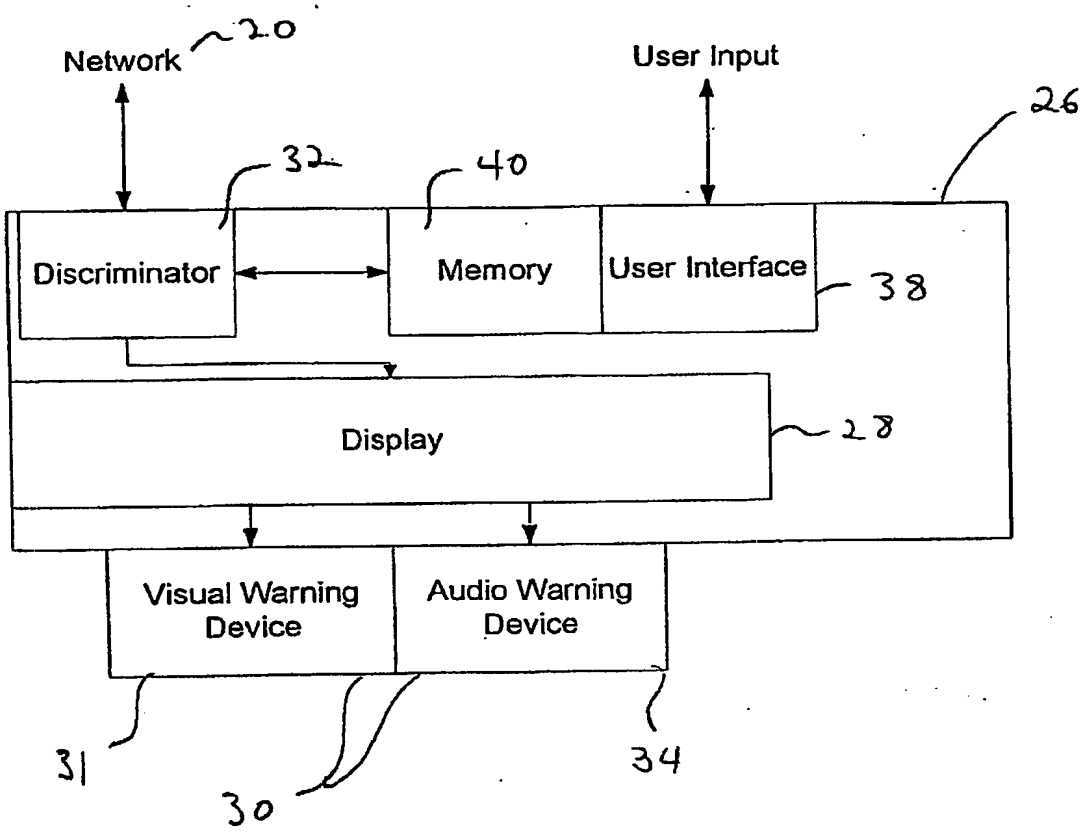
Network
20
User Input
26
32
40
Discriminator
Memory
User Interface
38
Display
28
Visual Warning Device
Audio Warning Device
31
30
34

FIG. 2

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